

RESPONSE UNDER 37 CFR 1.116 EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

May 1, 2008

OK to ENTER
KPK
5/2/08

Applicant(s): Stefan SCHMITT-WALTER

For: METHOD OF OPEN AND/OR CLOSED-LOOP CONTROL OF THE
MOVEMENT OF WELDING TONGS

Serial No.: 10/563 534

Group: 1793

Confirmation No.: 8443

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Examiner: Kerns

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Commissioner for Patents
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RESPONSE TO FINAL OFFICE ACTION

Sir:

In response to the Office Action dated November 6, 2007
and the Advisory Action dated February 28, 2008, please amend
the above-identified application as follows:

(Please see following pages.)

Amendments to the Specification

IN THE WRITTEN DESCRIPTION

Please replace the paragraph beginning at page 10, line 27, with the following rewritten paragraph:

---The primary and secondary drive devices 2, 3 are, for example, formed by electric motor drives, such as for example servomotors, wherein the primary and secondary drive devices 2, 3 form a welding tong drive 1.---

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1. (Currently amended) Method of open or closed-loop control of a welding tong movement by a welding tong drive, comprising at least one primary and one secondary drive device, wherein the primary drive device moves at least two welding tong limbs with welding electrodes from essentially opposite sides towards a welding object and presses the at least two welding tong limbs with a predetermined compressive force onto the welding object, and wherein the secondary drive device during its actuation varies a spatial orientation of the welding tongs, the method comprising the following steps:

a) approach of the welding tongs to a predetermined spatial point relative to the welding object;

b) holding of the welding tongs in a fixed spatial orientation during the approach;

c) after the holding step and before an actuation step, and after termination of the approach towards the welding object, acquiring an applied holding current for the secondary drive device;

d) actuation of the secondary drive device up to contacting of the welding object with at least one welding tong limb and acquisition of the contacting, wherein in the actuation step the holding current is varied by a predetermined contacting current level for the actuation of the secondary drive device for establishing contact, and

d)e) after acquisition of the contacting, closure of the welding tong limbs by the primary drive device with build-up of a predetermined compressive force for welding.

2. (Previously presented) Method according to Claim 1, wherein in the approaching step the welding tongs are moved by

a robot device and during actuation of the secondary drive device the welding tong limbs are in a fixed spacial relationship with respect to each other.

3-6. (Cancelled)

7. (Currently Amended) Method according to Claim 61, wherein the contacting current level is determined experimentally for essentially each spatial point.

8. (Currently Amended) Method according to Claim 61, wherein the contacting current level is selected to overcome friction forces occurring during the movement of the welding tongs.

9. (Currently Amended) Method according to Claim 61, wherein the contacting current level is increased by a specified factor to achieve an initial breakaway torque for initiating the movement of the welding tongs by the secondary drive device.

10. (Currently Amended) Method according to Claim 91, wherein the contacting current level is increased for at least one of a predetermined time and a predetermined movement displacement of the secondary drive device.

11-12. (Cancelled)

13. (Previously presented) Method according to Claim 1, wherein the welding force in the closure step is increased to about 5 kN.

14. (Previously presented) Method according to Claim 1, wherein the welding tong limbs are opened by the primary drive device before moving to a further welding point or after

termination of welding and then the welding tongs are moved by the secondary drive device to a starting spatial point.

15. (Previously presented) Method according to Claim 1, wherein deviations from specified spatial points of the welding object or from corresponding welding points are acquired by an open or closed-loop control device of at least one of the secondary drive device and the primary drive device and are passed to an evaluation device for quality assurance.

16. (Previously presented) Method according to Claim 1, wherein bodily changes to the welding electrodes and to parts of the welding electrodes due to wear, degrading of material, loss of a welding electrode or parts thereof are acquired on contacting the welding object or contacting the welding tong limbs or the welding electrodes together by an open or closed-loop control device.

17. (Cancelled)

18. (Previously presented) Method according to Claim 1, wherein the secondary drive device is swivelled by at least two single drives of the welding tongs essentially within a hemisphere.

19-20. (Cancelled)

REMARKS

Applicant appreciates the Examiner's comments during an April 30, 2008 telephone interview with regard to the above application.

In a February 28, 2008 Advisory Action, proposed Claims 1, 2, 7-10, 13-16 and 18 as set forth in Applicant's February 6, 2008 Response were indicated as allowable, while Claims 19 and 20 remained rejected.

The above amendment incorporates all of the proposed amendments from Applicant's February 6, 2008 Response, except Claim 19 and 20 have been cancelled.

As indicated in the Advisory Action, Claims 1, 2, 7-10, 13-16 and 18 are now in condition for allowance for the reasons provided in the February 6, 2008 Response. Since Claims 19 and 20 are now cancelled, the application is in condition for allowance as confirmed by the Examiner's comments.

Reconsideration and allowance of Claims 1, 2, 7-10, 13-16 and 18 is respectfully requested.

Further and favorable reconsideration is respectfully requested.

Respectfully submitted,



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Encl: None